

CARCASS AND GUT CHARACTERISTICS OF BROILER CHICKENS FED DIETARY LEVELS OF KAURA SORGHUM AS REPLACEMENT FOR MAIZE WITH FULL FAT SOYA BEAN

¹SANI, A. ²DOMA, U. D. ³GARBA, A.; & ¹OYENIRAN, J. O.

¹Department of Animal Health and production, Fed. Poly Bauchi. ²Department of Animal production, Faculty of Agriculture and Agricultural Technology ATBU Bauchi ³Department of forestry Tech. Fed. Poly Bauchi.

ABSTRACT

An experiment was conducted study the carcass and guts characteristics of broiler chickens fed dietary levels of Kaura sorghum as replacement for maize. Kaura sorghum replaced maize at 0, 25, 50, 75 and 100 % in diets 1, 2, 3, 4 and 5 respectively. Two hundred and forty broiler chicks were randomly allotted to five diets with four replicates in a completely randomized design. Forty birds were slaughtered for carcass yield and guts analysis. Results indicated significant ($P < 0.001$) difference on most of the carcass and gut parameters. It was concluded that Kaura sorghum can completely replace maize in broiler chickens diets without any negative effect on carcass yield and organ characteristics.

Introduction:

Maize has remained the main energy source in compounded feeds and constitutes about 50% of poultry ration (Amaefule et al., 1998). Feeding alone accounts for 70- 80% of the total cost of production, it makes the utilization of multiple feed ingredients very expedient. Sorghum is an energy ingredient due to its nutritional composition which is very similar to maize (Oluyemi and Roberts, 2013). Use of sorghum to replace maize in poultry diets will surely reduce the cost of

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Production and in turn reduce the deficiency in the animal protein intake among Nigerian. Apart from being used as organic manure, poultry dropping is used in fish production and in mixture with other feed ingredients to feed ruminant animals.

MATERIALS AND METHODS

Two hundred and forty (240) unsexed Anak 2000 broiler chicks were used for the research. Five diets of 23 and 20 % CP were formulated at the starter and finisher phases respectively in which Kaura sorghum replaced maize at 0, 25, 50, 75 and 100 % in diets 1, 2, 3, 4 and 5 respectively. Each diet was replicated four times with 12 birds per replicate in a completely randomized design. The experiment lasted for eight weeks where two birds were selected from each replicate making a total of forty birds. The birds were starved over night and were slaughtered for carcass analysis. Data generated were subjected to analysis of variance as reported by Steel and Torrie (1980) and Duncan multiple range test was used to separate the means where significant differences exist.

RESULTS AND DISCUSSION

Table 1: Ingredients and percentage composition of dietary level of kaura sorghum based diets fed to broilers at starter phase (1 - 5 weeks)

Ingredients	Diets				
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)
Maize	47.80	35.85	23.90	11.95	00.00
Kaura Sorghum	00.00	11.95	23.90	35.85	47.80
Soya bean	33.30	33.30	33.30	33.30	33.30
Wheat offal	10.00	10.00	10.00	10.00	10.00
Additives	8.90	8.90	8.90	8.90	8.90
Total	100	100	100	100	100
Crude protein (%)	23	23	23	23	23
Met. Energy (Kcal/kg)	3069.40	3050.60	3037.80	3021.70	3006.30

Table 2: Ingredients and percentage composition of dietary levels of Kaura sorghum based diets fed to broilers at finisher phase (5 - 9 weeks)

Ingredients	Diets				
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)
Maize	52.88	39.66	26.44	13.22	00.00
Kaura Sorghum	00.00	13.22	26.43	39.66	52.88
Soya bean	23.23	23.23	23.23	23.23	23.23
Wheat offal	15.00	15.00	15.00	15.00	15.00
Additives	8.90	8.90	8.90	8.90	8.90
Total	100	100	100	100	100
Crude protein (%)	20.00	20.00	20.00	20.00	20.00
Met.Energy (Kcal/kg)	3026.93	3009.15	2992.03	2074.25	2991.45

Table 3: Carcass characteristics of broiler chickens fed dietary levels of kaura sorghum based diets as replacement for maize

Parameters	Diets					SEM
	1 (0%)	2 (25%)	3 (50%)	4 (75%)	5 (100%)	
Live weight (kg)	1900.00	2000.00	1925.00	1925.00	1925.00	60.84 ^{NS}
Carcass (kg)	1550.00	1650.00	1600.00	1600.00	1537.50	54.30 ^{NS}
Dressing (%)	81.62	82.42	83.05	83.14	80.03	1.38 ^{NS}
Thigh (%)	11.23 ^b	13.96 ^{bc}	14.51 ^{abc}	14.67 ^{ab}	17.70 ^a	0.57 ^{***}
Back (%)	5.46 ^b	5.78 ^b	6.37 ^{ab}	6.25 ^{ab}	7.31 ^a	0.23 ^{***}
Drum stick (%)	3.94 ^{ab}	4.50 ^{ab}	3.45 ^b	4.53 ^{ab}	5.14 ^a	0.22 ^{***}
Breast (%)	9.58 ^b	11.56 ^{ab}	13.41 ^a	13.09 ^a	14.99 ^a	0.60 ^{***}
Leg (%)	2.58 ^b	3.63 ^a	3.55 ^a	3.58 ^a	3.18 ^{ab}	0.23 [*]
Wing (%)	4.39 ^c	5.27 ^{bc}	5.36 ^{abc}	6.69 ^a	6.01 ^{ab}	0.24 ^{***}
Neck (%)	3.09 ^b	3.63 ^b	3.63 ^b	3.88 ^b	6.01 ^a	0.19 ^{**}
Head (%)	1.86	2.31	2.34	2.26	2.00	0.16 ^{NS}
Liver (%)	1.62 ^b	1.68 ^b	1.84 ^{ab}	2.44 ^a	2.23 ^{ab}	0.11 ^{***}
Lungs (%)	0.47 ^b	0.54 ^{ab}	0.53 ^{ab}	0.56 ^{ab}	0.76 ^a	0.04 ^{***}
Heart (%)	0.40	0.50	0.44	0.48	0.60	0.05 ^{NS}
Gizzard (%)	1.47 ^b	1.66 ^{ab}	2.22 ^a	1.70 ^{ab}	1.81 ^{ab}	0.11 ^{***}

Abdominal fat (%)	0.81 ^c	1.63 ^a	1.63 ^a	0.88 ^{bc}	1.40 ^b	0.17 ^{***}
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The results obtained after the analysis indicated that live weight, carcass weight and dressing percentage (81.62-83.14%) were not significantly influenced by the dietary levels of kaura sorghum even though the values of dressing percentage were slightly higher than those (68.18-78.69%) reported by Bello *et al.* (2011) for broiler chickens. This is probably due to better utilization of the diets resulting in higher tissue deposition. However, the cut up parts were significantly ($P < 0.001$) affected by the dietary levels of kaura sorghum. This result conforms to the result of Adamuet *et al.* (2012) in broiler chickens fed yellow sorghum diets and also similar to the report of Kwariet *et al.* (2014) in broiler chickens fed different cereals based diets. This further suggests that kaura sorghum can completely substitute maize as energy source in poultry diets.

CONCLUSION

The non significance obtained in live and carcass weights as well as dressing percentages indicated that Kaura sorghum can completely replace the highly competed maize in broiler diets without any negative effect on the carcass and organs parameters.

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